



The background image shows a person in profile, wearing a yellow shirt, holding a black mobile phone. The phone screen displays a text message in Swahili. The message content is as follows:

Message Body	
CHANGARUA	17.08.2016 17:26
-----	
nasil kwaomba:	
Tigo 0853965151	
Voda 0753864887	
Airtel 0752717576	
Simba Logistic ES	

# MomConnect

## Operational Research:

### Capacity Building to Increase Registration Rates at Clinics

September 2017





# MomConnect Operational Research: Capacity Building to Increase Registration Rates at Clinics

Khou Xiong, MPH, MEASURE Evaluation

Brittany Iskarpatyoti, MPH, MEASURE Evaluation

September 2017

**MEASURE** Evaluation–Strategic Information  
for South Africa (MEval-SIFSA) Project  
138 Muckleneuk Street  
Nieuw Muckleneuk, Pretoria  
South Africa  
Tel: + 27 12 346 7490  
<http://www.measureevaluation.org/sifsa>

This research has been supported by the President's Emergency Plan for AIDS Relief (PEPFAR) through the United States Agency for International Development (USAID) under the terms of MEASURE Evaluation–Strategic Information for South Africa associate award AID-674-LA-13-00005. MEASURE Evaluation–SIFSA is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with ICF International; John Snow, Inc.; Management Sciences for Health; Palladium; and Tulane University. Views expressed are not necessarily those of PEPFAR, USAID, or the United States government.  
TR-17-207



## ACKNOWLEDGEMENTS

This operational research was designed by Khou Xiong and Brittany Iskarpatyoti, of MEASURE Evaluation, based at the University of North Carolina at Chapel Hill. They received support from Robert Allen and the entire MomConnect capacity-building team of MEASURE Evaluation–Strategic Evaluation for South Africa (MEval-SIFSA). Both MEASURE Evaluation and MEval-SIFSA are funded by the United States Agency for International Development (USAID) and the United States President’s Emergency Plan for AIDS Relief (PEPFAR).

The authors thank Sarie Podges of MEval-SIFSA for leading and overseeing the MomConnect capacity-building efforts, providing monitoring data critical for the operational research, and reviewing this report. Additionally, we want to thank Busisiwe Shabalala, Geraldine Raseala, and Lufuno Nekhubvi from MEval-SIFSA’s MomConnect capacity-building team for capturing operational research data, which was an added task to their training and capacity-building responsibilities.

We also thank Joy Kamunyor for her review of the report, as well as the Knowledge Management team of MEASURE Evaluation at the University of North Carolina at Chapel Hill for editorial and production services.

The research would not have been possible without support from the National Department of Health, namely Peter Barron and Antonio Fernandes, who oversee the MomConnect program.

This research was supported by PEPFAR through USAID.

Photo: © 2016 Riccardo Gangale/VectorWorks, courtesy of Photoshare

# CONTENTS

Acknowledgements .....	4
Contents.....	5
Abbreviations.....	6
Executive Summary .....	7
Introduction .....	9
Background .....	9
Problem Statement.....	10
Objectives .....	10
Methods .....	11
Monitoring MomConnect DHIS Data .....	11
Retraining Workshops.....	11
Supportive Site Visits.....	11
Analysis .....	12
Results .....	13
MomConnect DHIS 2 and CB Training Data .....	14
High-Volume ANC Facilities with Persistently Low Registration Rates .....	17
Persisting Barriers to MomConnect Registrations.....	17
Supportive Supervision and Feedback.....	18
Knowledge of MomConnect Registration Procedures .....	19
Discussion and Recommendations .....	20
Appendix 1. Subnational-Level Training Checklist.....	22
Appendix 2. Facility-Level Training Checklist .....	24
Appendix 3. Training Pretest .....	26
Appendix 4. Training Posttest.....	27
Appendix 5. Facility ANC Staff Survey.....	30
Appendix 6: Registration Observation .....	36
Appendix 7. Facility Audit.....	45
Appendix 8. Priority ANC Facilities .....	49

## ABBREVIATIONS

ANC	antenatal care
CB	capacity building
CHW	community health worker
DHIS	district health information system
DOH	Department of Health
OR	operational research
MEval–SIFSA	MEASURE Evaluation–Strategic Information for South Africa
MTN	Mobile Telephone Networks
NDOH	National Department of Health

## EXECUTIVE SUMMARY

The MomConnect initiative of South Africa's National Department of Health (NDOH) successfully registered more than 940,000 mothers in the first two years of its implementation. While this was a major accomplishment, it fell short of MomConnect's target to register 1 million pregnant women in the program to receive maternal and antenatal health messages upon their first visit to a public healthcare facility. To improve registration rates, MEASURE Evaluation—Strategic Information for South Africa (MEval-SIFSA)—funded by the United States President's Emergency Plan for AIDS Relief through the United States Agency for International Development—and the NDOH provided retraining and additional support to enhance the capacity of district- and facility-level supervisors who oversee MomConnect implementation at facilities. The objectives of the study in this report were to (1) assess whether capacity building efforts improved MomConnect registrations, (2) identify high-volume antenatal care (ANC) facilities that are consistently underperforming after capacity-building (CB) efforts, and (3) determine the persisting barriers that contribute to low registration rates.

CB efforts included supportive site visits at facilities, and subnational (subdistrict, district, and provincial) trainings. It was envisioned that those trained at the provincial, district, and subdistrict levels would cascade training to the facility level and provide ongoing support to increase MomConnect registrations. During trainings, checklists, pretests, and posttests were used to assess information shared and gained by participants. During supportive site visits, the research team performed a standardized assessment to determine the persisting barriers that contribute to low registration rates. The standardized assessment included a short facility staff survey, an observational checklist, and a facility audit. Descriptive statistics were performed to confirm whether trainees learned the content covered during training workshops and to identify common barriers encountered by the facility staff during MomConnect registrations.

MomConnect registration and ANC visit data in the district health information system 2 (DHIS 2) were tracked monthly to monitor the registration rates of ANC facilities. The total number of MomConnect registrations by month were compared to the total number of first antenatal clinic visits that month (from the previous year) to determine the registration rates for MomConnect at the facility level. The registrations were tracked against the CB activities to monitor whether the CB activities had any immediate effects on registrations.

The MomConnect CB team collected data from 28 district-level and 35 subdistrict-level trainings and 105 supportive site visits to individual health facilities between April 2016 and February 2017. During this period, there were 539,216 total registrations. Data showed an upward trend of registrations from previous years. Facilities that were reached more directly (such as through facility-level supportive visits) saw greater and more sustained increases than those reached more indirectly (such as through subdistrict and district retrainings). The provincial-level trainings did not increase registration rates and showed similar trends to those of facilities that were not reached by CB efforts. We saw that the higher registration rates started to decrease again in the second month after the intervention, and by the third month, facilities that had received training and those that had received no training showed similar registration rates. This indicates that feedback is needed, at a minimum, every three months, to sustain high registrations at facilities. The need for timely feedback is further emphasized with the finding that well over half of facility staff reported receiving no feedback, even though most of the staff provided reports on MomConnect registrations to their superiors.

Priority facilities—defined as facilities with high ANC volume and low registration rates—were identified each month for CB interventions. Over 11 months, 616 facilities had been identified as “priority” facilities for CB intervention. Of those facilities, 121 were persistently priority facilities (priority during nine out of 11 months), only seven of which received direct supportive site visits at any point.

Unsurprisingly, facility staff reported “network” and “time-outs” as main problems preventing MomConnect registrations (53% and 54%, respectively). However, when facility staff were asked about the reliability of specific networks at and around the health facility, Mobile Telephone Networks (MTN) and Vodacom were reported to be reliable and Cell-C was perceived as less reliable. CB staff had high success with confirming network coverage for all three networks. There was less success with connecting to the MomConnect server while on site. This suggests there might be barriers around the MomConnect server or technology around MomConnect functions rather than the “network” itself.

When MomConnect registrations were not successful, staff often did not take any steps to ensure that mothers could be registered later. Only 26 percent of facility staff responded that they took additional steps and 16 percent said they sometimes took additional steps. Guidance was provided during the retraining workshops on steps that should be taken for unsuccessful registrations, namely for staff to record mothers’ information for later registrations (a batched-registrations approach).

While MomConnect CB efforts made substantial strides in increasing registrations among pregnant women, MEval–SIFSA makes the following recommendations:

- Assess the reliability of all technology components that support MomConnect, especially during high-volume times (e.g., during morning hours, when most clinic visits occur).
- Emphasize the formal protocol for batched registrations when initial MomConnect registrations are not successful.
- Integrate MomConnect supportive supervision into facility staffs’ existing roles and responsibilities.
- Include MomConnect registration in routine quarterly data review meetings to provide timely feedback to facilities.



# INTRODUCTION

## Background

The MomConnect initiative of South Africa's NDOH celebrated its two-year anniversary in August 2016. MomConnect aims to support maternal health in South Africa by registering pregnant women to a cell phone-based system that links to clinical maternal, child, and women's health services. According to routine MomConnect data uploaded to DHIS 2—the country's software for managing health information systems—more than 400,000 women registered in the MomConnect program at a healthcare facility in 2015, which equates to approximately 40 percent of pregnant women who attended their first antenatal care (ANC) visit. More than 540,000 women registered in 2016, approximately 56 percent of all first ANC visits that year. While this was a major accomplishment for its first two years of implementation, it fell short of MomConnect's target to register all pregnant women in the program to receive maternal and antenatal health messages. The registration rates in 2015 and 2016 indicate that the target of registering all women in MomConnect will not be achieved without proper support to subnational levels and attention to addressing barriers to registration.

MEASURE Evaluation—Strategic Information for South Africa (MEval-SIFSA) conducted operational research (OR) for the NDOH in August 2015 to identify reasons for the low registration rates. A process evaluation approach, which included qualitative and quantitative methods, assessed how mothers were being registered to the program at the facilities, explored the challenges of registration, delineated the initial and ongoing staff trainings conducted during the rollout, and identified the management structures in place to support MomConnect. The OR found that there were three primary ways mothers were registered in MomConnect at facilities: (1) individually, (2) during staff-facilitated group registration, or (3) through a batched registration approach, where staff manually collected mothers' information in logbooks and then registered them later. Group and batched registrations were associated with higher registration rates. Network issues and registration time-outs were reported as the main barriers to registration. It was also found that the initial staff training on registration provided was not sufficient and that there was not a clear management or supervisory structure to support the MomConnect program.

From the OR findings, MEval-SIFSA recommended that the NDOH provide retraining and additional support to enhance the capacity of district- and facility-level supervisors who oversee MomConnect implementation at facilities. The recommendations further included revising the training protocol to incorporate group and batch registrations, a new supportive supervisory approach, and feedback loops. The NDOH adopted the recommendations and pursued capacity building (CB) efforts for provincial-, district, and subdistrict level MomConnect focal persons. The NDOH, Wits Reproductive Health and HIV Institute, MEval-SIFSA and other stakeholders revised training materials between January and April 2016. MEval-SIFSA started retraining workshops and supportive site visits to facilities in May 2016.

Considering that MomConnect is in only its third year of implementation, the high investment in MomConnect, and the NDOH's desire for MomConnect to achieve its goal of registering all pregnant women, it is important to continue monitoring the progress of MomConnect and assess whether the CB interventions (retrainings and supportive site visits) improve registration rates. Furthermore, it is necessary to understand and address the persisting barriers for those facilities that continue to have low registrations after retraining.

This phase of OR focused on monitoring the registration rates, retraining workshops, and supportive site visits to determine whether the CB activities improved registrations and to identify facilities with persisting low-performance after the CB efforts.

## **Problem Statement**

MomConnect registrations did not achieve the target number of registrations after two full years of implementation. CB efforts are in progress to improve registration rates and ultimately achieve NDOH's goal of registering 1 million pregnant women in the public health system. Findings from previous OR informed the revisions of training materials and protocols for CB efforts. However, it was important to continue monitoring registration rates after the CB intervention to ensure that the right strategies are implemented to increase registrations. This OR closely monitored whether the CB intervention increased registrations. Staff also visited low-performing facilities to provide additional support as needed to improve registrations, and documented the persisting barriers and support provided.

## **Objectives**

The objectives of this report on the second phase of OR are to (1) assess whether capacity building efforts improved MomConnect registrations, (2) identify high-volume antenatal care (ANC) facilities that are persistently underperforming after CB efforts, and (3) determine the persisting barriers that contribute to low registration rates.

# METHODS

## Monitoring MomConnect DHIS Data

MomConnect registration and ANC first-visit data in the DHIS 2 were tracked monthly to monitor the registration rates at ANC facilities. The registrations were tracked against the CB activities to monitor whether the CB activities had had any immediate effects on registrations. This active monitoring of data allowed the MomConnect CB team to identify high-priority areas or facilities on which to focus the CB activities and address registration issues when possible. The CB efforts were intended to be prioritized for high-volume, low-registration facilities. A facility was characterized as “low registration” if it registered less than 50 percent of its antenatal first visits from the previous year.

## Retraining Workshops

MomConnect CB staff used a training-of-trainers approach and facilitated retraining workshops for provincial-, district-, and subdistrict-level MomConnect focal persons. The retraining objectives, content, and materials were similar across the levels of trainings. It was envisioned that those trained at the provincial, district, and subdistrict levels would further train facility-level and other staff on MomConnect registrations. The retraining incorporated updated training materials, a new paper registration form for facilities with poor or no network coverage, and strategies for sustainable capacity building in a decentralized manner. Retraining workshops began in May 2016. There was a concerted effort to prioritize provinces, districts, and subdistricts with low MomConnect registrations for the retraining workshops. However, the retraining workshops were largely determined by the availability of the subnational Department of Health (DOH) offices and personnel during this period.

Training checklists were used to document specific training activities completed during training sessions. See Appendixes 1 and 2 for the training checklists at the subnational and facility levels, respectively. The checklists reminded trainers about activities they should complete during each training workshop. All the training workshops were expected to be similar, but some variation was expected owing to contextual factors, such as electricity, cellular network, time availability, and the type of trainees at each workshop. The training checklists allowed for documentation of completed training activities and the analyses of their possible association with improved MomConnect registrations.

Pretests and posttests (Appendixes 3 and 4) were completed at the beginning and end of training workshops. These tests assess whether the trainees learned critical information for MomConnect registrations.

## Supportive Site Visits

The MomConnect CB team conducted supportive site visits to low-performing facilities and determined the persisting barriers that contribute to low registrations. There were variations between districts and provinces as to whether site visits to facilities could be conducted and, at times, facility managers could only be addressed at subdistrict and district meetings. Focused site visits gained momentum beginning in December 2016.

During supportive site visits, the research team performed a standardized assessment to determine the persisting barriers that contribute to low registration rates. This assessment consisted of a short facility staff survey (Appendix 5), an observational checklist (Appendix 6), and a facility audit (Appendix 7). The short facility staff survey asked one or more staff members responsible for MomConnect registrations to

identify common problems encountered during the registration process. Problems reported by facility staff were verified through the quality audit and observational checklist. When possible, the research team provided additional support to facility staff while on site to mitigate those barriers identified in the survey. Additional support included on-site retraining, provision of training materials or registration tutorials, and assistance in solving minor technical issues. All additional support was documented.

## Analysis

The data collected for this operations research were intended for practical use by the CB team, to monitor whether the CB activities had immediate effects on registration rates and to help prioritize high-volume, low-registration facilities. The total number of MomConnect registrations by month was compared to the total number of first antenatal clinic visits that month (from the previous year) to determine the registration rate for MomConnect:

$$\text{registration rate} = \text{registrations} / \text{antenatal first visit total}$$

Registrations and first antenatal visits are data elements in the DHIS 2 database and named “Registrations” and “Percent of Registrations as ratio of all ANC 1st visits (previous year),” respectively. Registration rates were tracked for each facility in districts that received retraining. Because ANC visit data are slow to be entered in DHIS 2 (the timeline for data to be entered in the DHIS 2 at the national level was 45 days), the registration rate was determined by comparing current registrations to the previous year’s ANC visits (percentage of registrations as the ratio of all ANC first visits [previous year]). The registration rate was entered each month in a master OR monitoring database for each facility. A facility was deemed “priority” if it averaged greater than 50 ANC visits per month but had a registration rate of less than 50 percent (registrations/first ANC visits). A list of persistently “priority” facilities—i.e., facilities identified as priority 80 percent of the time or nine of the 11 months—was generated for this report.

Level (province, district, subdistrict, or facility) and sites affected by MomConnect CB trainings were recorded and reported monthly by the CB team. These were entered in the OR monitoring master database. A step-wedged time series analysis was performed to assess the average registration rate trend one month before (T-1), the month of (T0), and one to three months after trainings occurred (T1-T3). We assessed the registration trends for facilities based on their most direct level of training, in that if a facility was affected by both district-level training and received a facility-level supportive visit, we categorized this facility as “facility level.” Mean registration rates, standard deviations, and standard means error were calculated across levels of training. One-way ANOVA testing was conducted to compare means at various time points using *OpenEpi v3.01*.

Descriptive statistics analysis was performed on data collected from the training pretests and posttests to confirm whether trainees learned the content covered during training workshops. Data from the facility staff survey, observational checklist, and facility audit were also analyzed descriptively to identify common barriers that were encountered by the facility staff during MomConnect registrations.

## RESULTS

The MomConnect CB team collected data from 28 district-level and 35 subdistrict-level trainings and 105 supportive site visits to individual health facilities between April 2016 and February 2017. Assuming that the provincial-, district-, and subdistrict-level workshops had the intended cascading effect of knowledge transfer down to the facilities, the workshops potentially reached 3,327 of approximately 3,800 public facilities nationwide.

Data represent the number of facilities directly or indirectly (through subdistrict, district, or provincial) reached by trainings as such:

- Facility (n=114)
- Subdistrict (n=670)
- District (n=1413)
- Province (n=1130)

There were 1,187 participants who completed both the pretests and posttests during the retraining workshops. Of the respondents to the pretests and posttests, approximately 50 percent self-identified as an ANC nurse, approximately 10 percent as a manager, and 10 percent as a community health worker (CHW). The remaining 30 percent of respondents were mostly counsellors, health promoters, or administrative staff.

Ninety facility staff surveys and 105 facility audits were completed during the supportive site visits to individual facilities. Seventy-nine percent of the respondents for the facility staff survey were ANC nurses, 13 percent were facility-level managers, and the remaining respondents were mostly CHWs or volunteer health workers. ANC nurses and CHWs were reported to be the primary staff responsible for MomConnect registrations, by 64 percent and 13 percent of the respondents, respectively.

Based on the facility staff surveys, individual registrations remained the most common type of registration among those facilities visited (79%). Thirteen percent of the facilities performed batched registrations and 7 percent performed group registrations. The average time to complete one individual registration was 6.6 minutes and 6.9 minutes for a full-batched registration. Group registrations took 8 minutes (see Table 1).

**Table 1. Types of registration and average time for registrations**

	Facilities (%)	Average Time for Registration (Minutes)
Individual registration	79	6.6
Group registration	7	8
Batched registration	13	6.9

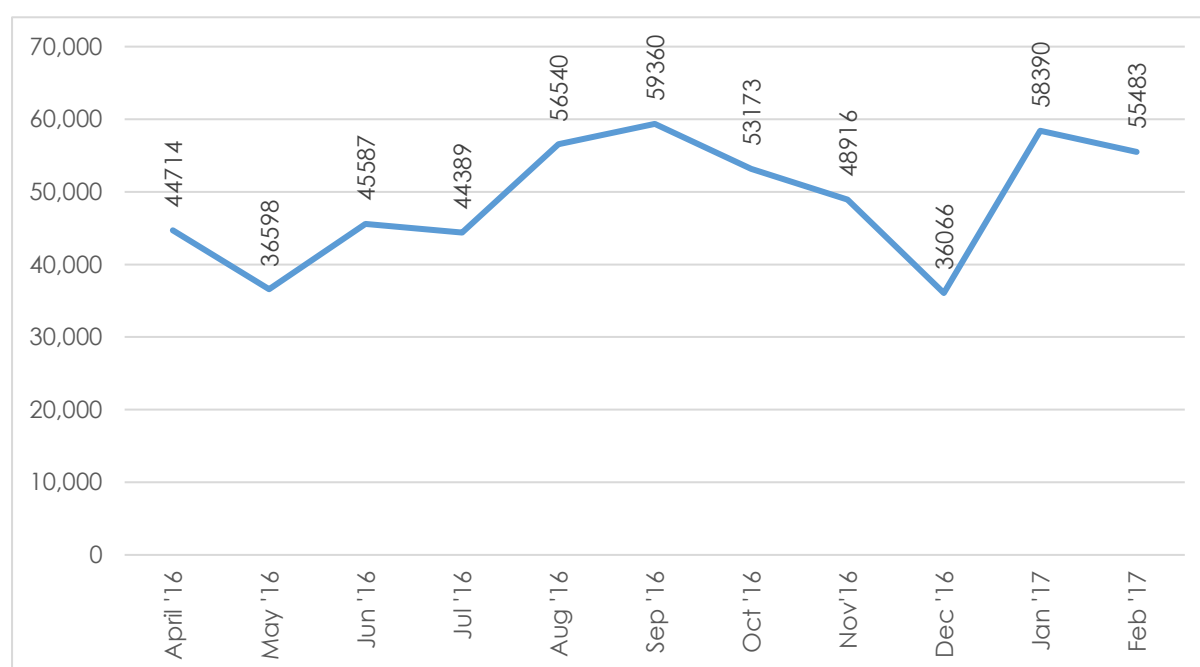
The CB team observed 27 MomConnect registration processes during the supportive site visits. The number of observations is low, because MomConnect registrations occur only on specific days of the week, when facilities receive mothers for their first ANC visits. Additionally, ANC staff are exceptionally busy during first-visit intake and preferred that the CB team members visited on a different day or after

the busy intake period, which is when MomConnect registration usually occurs. Of the 27 observations, 13 were individual registrations, three were group registrations, and 11 were batched registrations.

## MomConnect DHIS 2 and CB Training Data

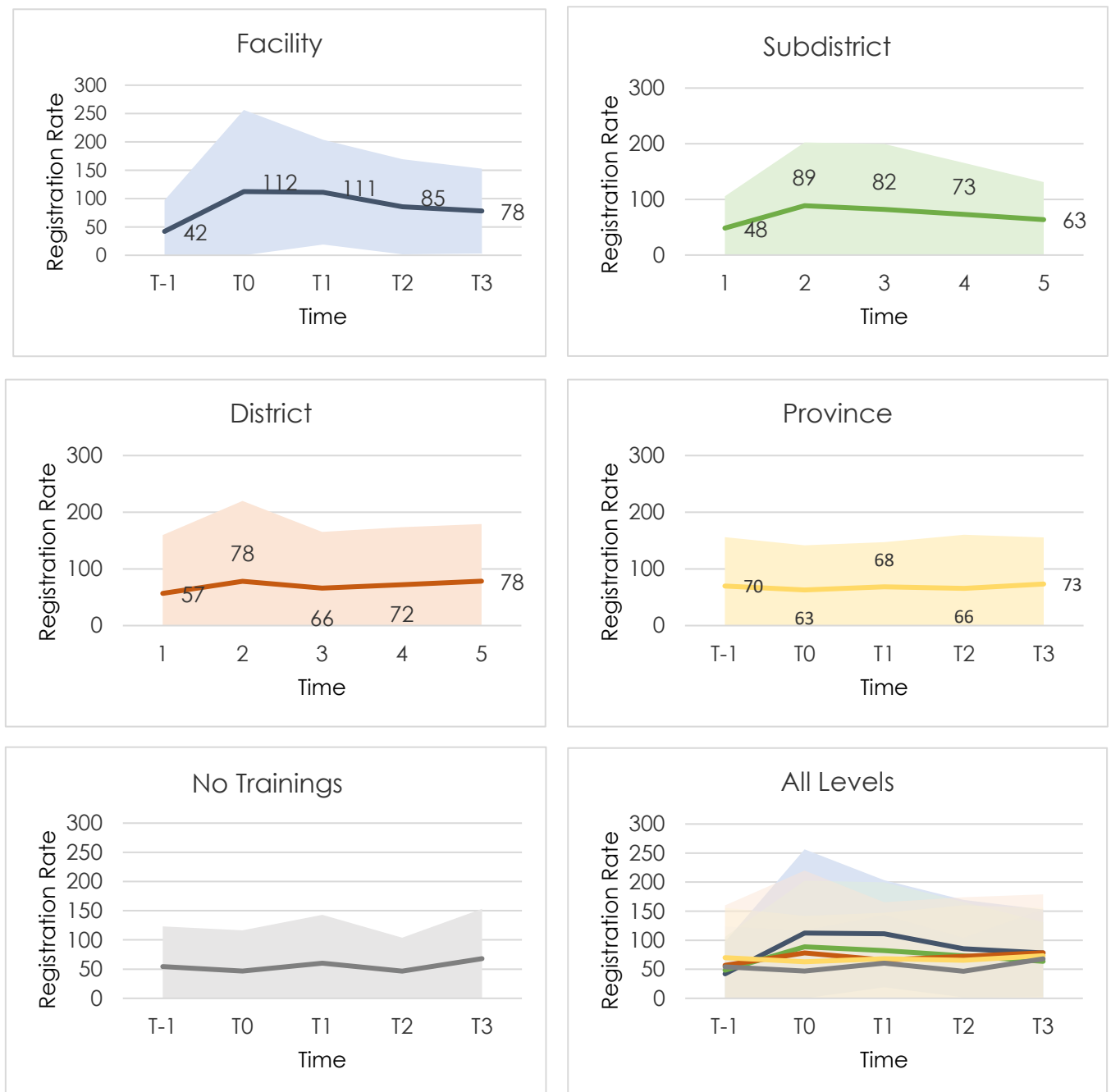
Between April 2016 and February 2017, there were 539,216 total registrations (see Figure 1). There was an overall trend of increasing registrations between this period.

**Figure 1. Total registrations to MomConnect, by month**



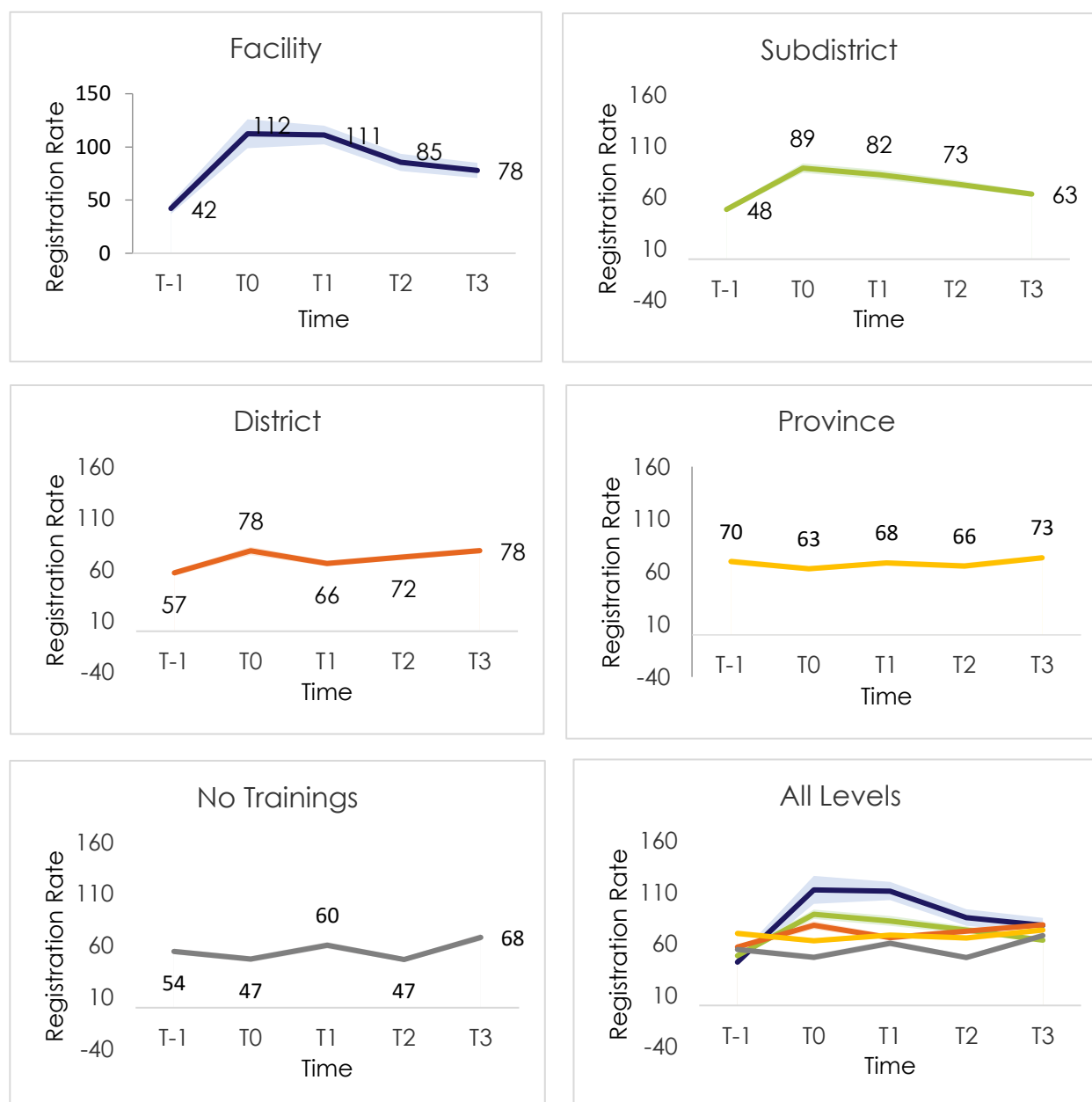
The level at which training was conducted had a direct relationship with trends in the mean registration rate from T-1 to T3. Facilities that were reached more directly (such as through facility-level supportive visits) saw greater and more sustained increases than those reached more indirectly (such as through subdistrict and district retrainings). The effect of provincial-level trainings showed similar trends to those of facilities not reached by CB efforts. However, there was large variability in registration rates, as seen in Figure 2. These plots are based on the mean registration for one month prior to training (T-1), the month of training (T0), and the three months following training (T1, T2, and T3). Percentages over 100 are likely due to back-registrations of mothers who had their ANC first visits the previous month.

**Figure 2. Influence of different levels of training on average registration rates over time, with standard deviation**



Because of the large spread and variability of data, we examined the standard means error to understand better the precision of the means and differences between means (Figure 3).

**Figure 3. Influence of different levels of training on average registration rates over time, with standard means error**



An analysis of variance showed that there was a statistically significant difference between levels of training and mean registration rate as determined by a one-way ANOVA ( $F(4, 6308)=28.058$ ;  $p<<<0.0001$ ). Facilities that received direct supervisory visits saw larger increases in mean registration rates than those that received subdistrict, district, provincial, or no trainings in the first two months (T0, T1). However, three months following trainings, facilities who received trainings at any level reported similar registration rates, although still statistically different ( $F(4, 6308)=4.568$ ;  $p=0.001$ ).



## High-Volume ANC Facilities with Persistently Low Registration Rates

Priority facilities—facilities with high ANC volume and low registration rates—were identified each month for CB intervention. Over 11 months, 616 facilities had been identified as “priority” facilities for CB intervention. Of those facilities, 121 were persistently priority facilities (nine out of 11 months); these facilities are listed in Appendix 8. Seven of these persistent priority facilities received direct supportive site visits (marked by an asterisk); however, three occurred in February 2017 as a response to their priority status (Phomolong Clinic, Phahameng Clinic, and Folang Clinic: all in Gauteng Province).

## Persisting Barriers to MomConnect Registrations

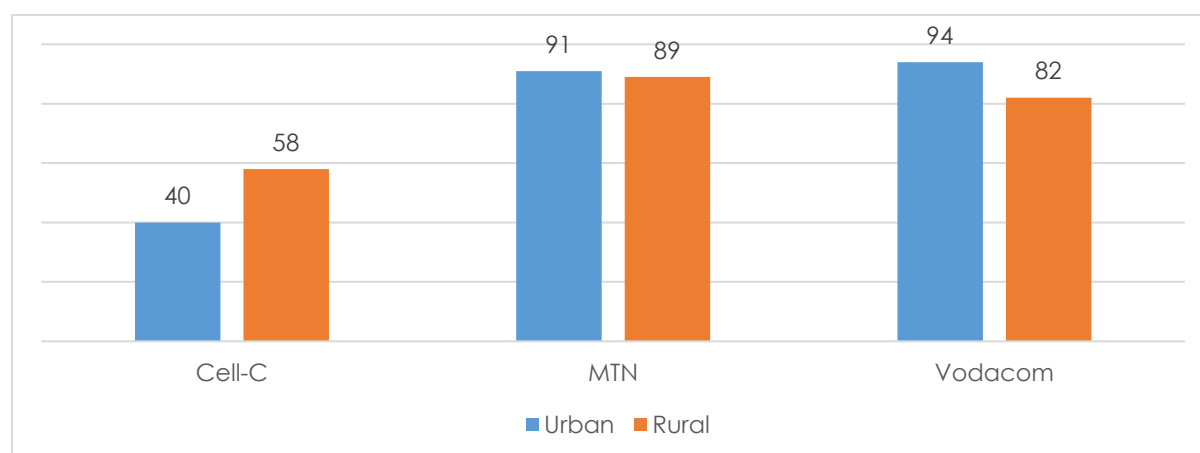
Unsurprisingly, facility staff reported “network” and “time-outs” as the primary problems preventing MomConnect registrations (53% and 54%, respectively). “Registrations taking too much time” was the third most-reported barrier, by 33 percent of the survey respondents. Additional barriers to MomConnect registrations are listed in Table 2.

**Table 2. Percentage of reported barriers to MomConnect registrations by facility staff**

Barriers	Percent of Facility Staff Reporting
Time-outs	54
Network	53
Registration took too much time	33
Mother opted out	27
nonliterate	19
Mother did not have required information	16
Mother did not speak any of available languages	12

To further explore the network issues, facility staff were asked about the reliability of South Africa’s main cellular networks. Among the top three network providers in South Africa (Vodacom, MTN, and Cell-C), facility staff reported Cell-C as being the most unreliable network (see Figure 4). This was especially true at urban sites, where only 40 percent of staff reported Cell-C as reliable at the facility. However, staff reported high reliability with MTN and Vodacom, with over 90 percent of staff reporting the two networks to be reliable at urban sites and over 80 percent at rural sites.

**Figure 4. Percentage of reported network reliability by facility staff**



CB staff also confirmed network coverage using SIM cards for major networks to make calls, and tested whether they could connect to MomConnect over the networks, by attempting a MomConnect subscription during the facility supportive site visits as part of the facility audit. Facility staff reported Cell-C network as an unreliable network, but CB staff confirmed on-site network coverage for 94 percent of urban sites and 71 percent of rural sites where a Cell-C SIM was available (see Table 3). CB staff confirmed on-site network coverage for MTN and Vodacom, which was consistent with the facility staffs' reported reliability of the two networks. Despite confirming network coverage, CB staff had less success with confirming connectivity to the MomConnect server. It is noteworthy that CB staff were not able to establish a MomConnect connection while on-site for approximately 20 percent of the facilities over the Vodacom network.

**Table 3. Percentage of confirmed network coverage and connectivity to MomConnect**

	Urban			Rural		
	Cell-C (n=16)	MTN (n=47)	Vodacom (n=46)	Cell-C (n=42)	MTN (n=57)	Vodacom (n=55)
Confirmed coverage	94	98	93	71	91	91
If confirmed, successfully connected to MomConnect	73	91	74	97	85	76

The reported barriers to MomConnect registrations were not surprising. However, only 26 percent of the staff reported taking any additional steps to troubleshoot problems encountered during registration. Twenty-two percent reported “sometimes” taking additional steps, while over half reported not taking any steps at all to address problems encountered during registration. Almost all facility staff who attempted to troubleshoot registration problems described their follow-up steps as some form of reporting the problem up to the facility manager or to the district office.

Similarly, when MomConnect registrations were unsuccessful, staff often did not take any steps to ensure that mothers could be registered later. Only 26 percent of facility staff responded that they took additional steps and 16 percent said they sometimes took additional steps. The solutions described to address an unsuccessful registration included (1) making a note to register the mother during her next ANC visit (51%), and (2) recording the mothers' information for a batched registration (32%). Only two respondents said that they attempted the MomConnect registration a second time.

## Supportive Supervision and Feedback

Most facility staff said they provided either a paper report or a verbal report to their supervisor on MomConnect registrations (58% and 30%, respectively). However, most facility staff received no or minimal feedback on registration rates, with 61 percent receiving no feedback at all (see Table 4).

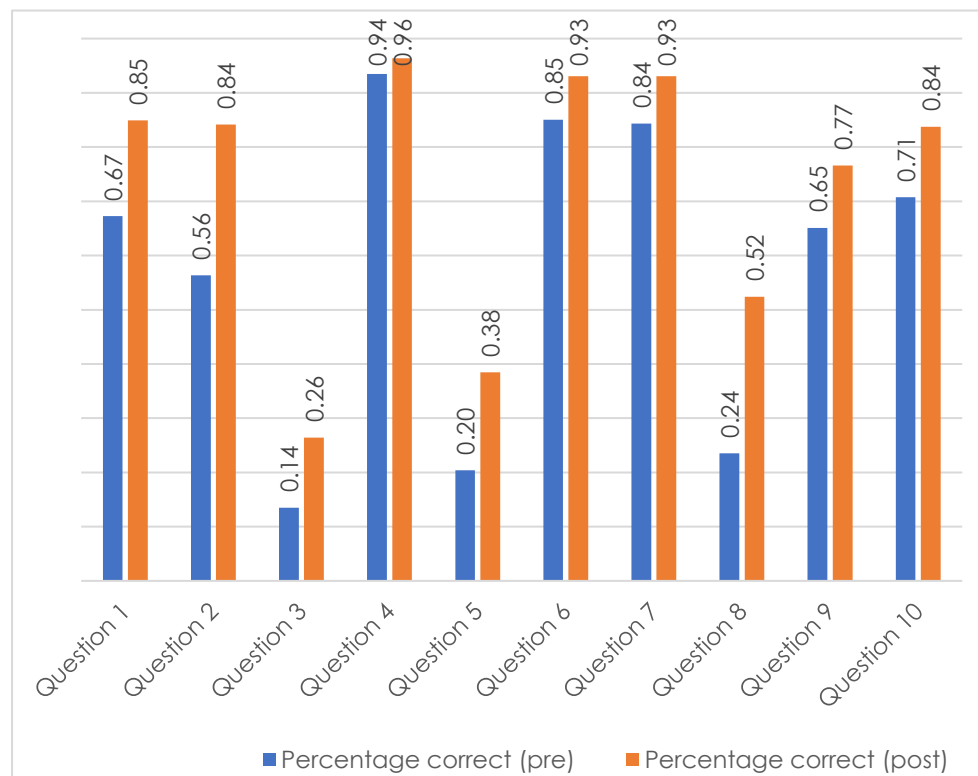
**Table 4. Percentage of facility staff who receive feedback on registration rates**

Feedback on Registration Rates	
Receive weekly feedback	3%
Receive monthly feedback	13%
Sometimes receive feedback	21%
Do not receive any feedback	61%

## Knowledge of MomConnect Registration Procedures

Data from the pretests and posttests showed that the retraining workshops improved participants' knowledge of the MomConnect registration protocol (see Figure 5 for results, and Appendixes 3 and 4 for content of questions). There was nearly 50 percent improvement for Question 2, which pertained to knowledge of the information required from the mother to register her in MomConnect. Almost all participants knew that MomConnect registrations were monitored by NDOH (Question 4). Noteworthy is that only 38 percent of participants correctly answered Question 5 regarding steps that should be taken if a MomConnect registration is not successful on the first attempt

**Figure 5. Pretest and posttest results**



## DISCUSSION AND RECOMMENDATIONS

Facility staff reported network issues and time-outs as the main barriers to MomConnect registration. This is similar to findings from previous operations research. However, this study further explored the underlying causes of “network issues.” Facility staff were asked about the reliability of specific networks at/or around the health facility; MTN and Vodacom were reported to be reliable and Cell-C was perceived as a less reliable. CB staff had high success with confirming network coverage for all three networks. There was less success with connecting to the MomConnect server while on site. This suggests that there might be barriers around the MomConnect server or technology rather than the “network” as commonly reported. The lowest success rate for MomConnect connectivity was over the Vodacom network, the preferred network for MomConnect users. Therefore, a lower rate of connectivity to MomConnect over the Vodacom network is potentially problematic to a large portion of MomConnect users.

Furthermore, CB staff responsible for supportive site visits to facilities observed that MomConnect registrations often failed in the morning, when facilities are receiving mothers for their clinic visits and likely registering women on MomConnect. CB staff also observed, and received feedback from facility staff, that MomConnect registrations were more successful when batched registrations were attempted in the afternoon, or later in the day. This raises the possibility that high traffic at prime times, such as mornings, may overload the MomConnect server and cause connection failures. This study did not aim to assess specific technology components that support MomConnect or the complex interoperability between MomConnect and various cellular networks. We cannot make concrete conclusions on the reliability or robustness of the MomConnect technology. Nevertheless, the above findings give weight to the possibility that barriers that have been largely described as a “network” issues are actually because of the MomConnect infrastructure. We recommend that the NDOH and MomConnect stakeholders assess the reliability and robustness of all technology components that support MomConnect.

The study also found that most facility staff were not proactive in resolving issues they encountered during MomConnect registrations. For example, only two out of 90 facility staff reported that they attempted the registration a second time if the registration failed the first time. The lack of troubleshooting was not unexpected, since facility staff were not trained on how to manage specific challenges during registrations. Staff likely do not have the time, knowledge, or skill set to quickly resolve specific issues. Guidance was provided during the retraining workshops on steps that should be taken for unsuccessful registrations, namely for staff to record mothers’ information for later registrations (a batched-registrations approach). Unfortunately, the pretest and posttest results revealed that only one-third of workshop participants understood this procedure, even after the retraining. Coincidentally, only one-third of the survey respondents were following this protocol and proceeded with batched registrations after failed MomConnect registrations. We recommend that the MomConnect CB team revisit their training materials and instructions on batch registrations, and emphasize the formal protocol for batched registrations when initial MomConnect registrations are not successful.

Most important, the step-wedged time series analysis showed that the retraining workshops increased MomConnect registrations. The slight improvement in registration rates for facilities that did not receive any retrainings indicated that the higher-level trainings, at the provincial and district levels, had some of the intended trickle-down effect. The CB team provided internal validation, based on feedback they received from subnational stakeholders, that the re-trainings contributed to the overall improvements in registration rates. However, this study did not allow us to verify this effect.

The subdistrict- and facility-level trainings were most effective in increasing registrations, often with a dramatic increase in registrations during the month of training. Registration rates started to decrease again

in the second month after the intervention, and by the third month, facilities that had received training and those that did not receive any training showed similar registration rates. This indicates that feedback is needed every three months at a minimum to sustain continued high registrations at facilities. This finding further supports the previous operations research recommendation that continued supportive supervision for MomConnect is needed to sustain high registration rates. We further recommend that supportive supervision be integrated into facility staffs' existing roles and responsibilities and that MomConnect registration data be included in routine quarterly data review meetings. This minimizes the need for additional meetings, which can be time-consuming and costly, while allowing for quarterly discussion and proper feedback (every three months) on MomConnect registrations. The need for timely feedback is further emphasized with the finding that well over half of facility staff reported to receiving no feedback, even though most of the staff provided reports on MomConnect registrations to their superiors.

# APPENDIX 1. Subnational-Level Training Checklist



## Training Checklist- Provincial/District/Sub-District Level

The purpose of this checklist is to provide a set of guidelines for MomConnect Facility Level trainings. The checklist, which was developed parallel to the training curriculum, can be a resource for facilitators to ensure key components of the training are addressed.				
<b>TRAINING IDENTIFICATION</b>				
TD001	Date of training:			
TD002	Name of trainer:			
TD003	Number of participants:			
TD004	Level of training:	<input type="checkbox"/> Provincial <input type="checkbox"/> District <input type="checkbox"/> Sub-District		
TD005	Name of Province/district/sub-district:			
<b>SUB-DISTRICT, DISTRICT &amp; PROVINCIAL LEVEL TRAINING</b>				
<b>TASK CHECKLIST</b>		<b>Completed?</b>		
		<b>Yes</b>	<b>NO</b>	<b>NA</b>
TD101	Conduct Pre-Test			
TD102	Present MomConnect video (intro)			
TD103	Explain the different MomConnect registration options available, and their pros and cons (ind., group and batch)			
TD104	Explain new process and new "Patient Details" form for collecting mothers' information for MomConnect registration			
TD105	Go over the 5 pieces of required information needed for a MomConnect registration <ul style="list-style-type: none"> <li>- Phone number</li> <li>- Facility Code</li> <li>- Baby's due date</li> <li>- ID Number/Passport number</li> <li>- Preferred language</li> </ul>			
TD106	Provide hands-on tutorial of MomConnect registration, with each participant using his/her own phone			
TD107	Role Play of individual, group and batch registration process			
TD108	Present and discuss common barriers to MomConnect registrations			
TD109	Present and discuss potential solutions to the common barriers			

TD110	Present and discuss how to report technical issues that are encountered during registration			
TD111	Present and discuss reporting expectations of the re-training process (OR forms, to whom and how)			
TD112	Present "Actions research" objectives and methodology			
TD113	Thoroughly go over facility "Observation and Audit"			
TD114	Thoroughly go over the training checklist for facility level training			
TD115	Thoroughly go over the training pre- and post-tests			
TD116	Thoroughly go over facility staff questionnaire			
TD117	Thoroughly go over flow chart/diagram of identified problems to suggested solutions			
TD118	Discuss network coverage and how to obtain coverage maps in area of facility- multiple network providers			
TD119	Present and discuss the roles and responsibilities of MomConnect Focal Persons (all levels) <ul style="list-style-type: none"> <li>- Participant should know who the MomConnect Focal Persons are for their sub-district, district and provincial offices</li> <li>- Participants should have comprehensive understanding of the role of a MomConnect Focal Person</li> </ul>			
TD120	Explain the MomConnect reporting process			
TD121	Conducted data use training			
TD122	Discussed target setting			
TD123	Promote NurseConnect			
TD124	Conduct Post-Test			

## APPENDIX 2. Facility-Level Training Checklist



### Training Checklist- Facility Level

The purpose of this checklist is to provide a set of guidelines for MomConnect Facility Level trainings. The checklist, which was developed parallel to the training curriculum, can be a resource for facilitators to ensure key components of the training are addressed.				
<b>TRAINING IDENTIFICATION</b>				
TF001	Date of training:			
TF002	Name of trainer:			
TF003	Number of participants:			
TF004	Facility Number:			
TF005	Facility Name:			
<b>FACILITY LEVEL TRAINING</b>				
<b>TASK CHECKLIST</b>		<b>Completed?</b>		
		<b>Yes</b>	<b>NO</b>	<b>NA</b>
TF101	Conduct Pre-Test			
TF102	Present MomConnect video (intro)			
TF103	Explain the different MomConnect registration options available, and their pros and cons (ind., group and batch)			
TF104	Explain new process and new "Patient Details" form for collecting mothers' information for MomConnect registration			
TF105	Go over the 5 pieces of required information needed for a MomConnect registration <ul style="list-style-type: none"> <li>- Phone number</li> <li>- Facility Code</li> <li>- Baby's due date</li> <li>- ID Number/Passport number</li> <li>- Preferred language</li> </ul>			
TF106	Provide hands-on tutorial of MomConnect registration, with each participant using his/her own phone			
TF107	Role Play of individual, group and batch registration process			
TF108	Remind participants that MomConnect is voluntary and review "opt-out" process			
TF109	Present and discuss common barriers to MomConnect registrations			
TF110	Present and discuss potential solutions to the common barriers			
TF111	Present and discuss how to report technical issues that are encountered during registration			
TF112	Present and discuss the roles and responsibilities of MomConnect Focal Persons (all levels) <ul style="list-style-type: none"> <li>- Participant(s) should know who the MomConnect Focal Persons are for their sub-district, district and provincial offices</li> <li>- Participants should have comprehensive understanding of the role of a MomConnect Focal Person</li> </ul>			



TF113	Explain the connection between MomConnect and WhatsApp/Facebook			
TF114	Explain the MomConnect reporting process			
TF115	Promote NurseConnect			
TF116	Conduct Post-Test			

## APPENDIX 3. Training Pretest



### Training Pre-Test

Thank you for participating in the MomConnect training! The pre/post test is for internal use only. Results from these tests will be used to improve trainings in the future. Individual results will not be shared and no identifying information will be kept.			
TRAINING INFORMATION			
TR001	Date of training:		
TR002	Level of training:	<input type="checkbox"/> Provincial <input type="checkbox"/> District <input type="checkbox"/> Sub-District <input type="checkbox"/> Facility	
TR003	Name of Province/district/sub-district/facility:		
TR004	I am a:	<input type="checkbox"/> Manager <input type="checkbox"/> Medical Doctor <input type="checkbox"/> ANC Nurse <input type="checkbox"/> Community Health Worker <input type="checkbox"/> Volunteer Health Worker <input type="checkbox"/> Administrative Staff <input type="checkbox"/> Other: _____	
TR005	Does NurseConnect occur in the same area?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	
TR006	What are the last 3 digits of your phone number?		
Please state if the following statements are true or false:		True	False
TR101	Expectant mothers can only register to MomConnect at ANC facilities.		
TR102	In order to register to MomConnect, you only need the mother's name and phone number.		
TR103	Registration into MomConnect is mandatory for all pregnant mothers.		
TR104	MomConnect registrations are monitored by the National Department of Health.		
TR105	If a MomConnect registration is not successful at first attempt, then the mother can try to register again when she returns for her next ANC visit.		

TR106	I should document all relevant information on the new Patient Details form for every MomConnect registration.		
TR107	Only registered midwives can register pregnant woman to MomConnect.		
TR108	When the pregnant woman delivers the message automatically changes to include the baby.		
TR109	Pregnant woman can only be registered to MomConnect during the week days and during working hours.		
TR110	I can only use my own cellular phone to register mothers to MomConnect.		

Thank you for your participation!

## APPENDIX 4. Training Posttest



### Training Post-Test

<b>Thank you for participating in the MomConnect training!</b> The pre/post test is for internal use only. Results from these tests will be used to improve trainings in the future. Individual results will not be shared and no identifying information will be kept.			
TRAINING INFORMATION			
TT001	Date of training:		
TT002	Level of training:	<input type="checkbox"/> Provincial <input type="checkbox"/> District <input type="checkbox"/> Sub-District <input type="checkbox"/> Facility	
TT003	Name of Province/district/sub-district/facility:		
TT004	I am a:	<input type="checkbox"/> Manager <input type="checkbox"/> Medical Doctor <input type="checkbox"/> ANC Nurse <input type="checkbox"/> Community Health Worker <input type="checkbox"/> Volunteer Health Worker <input type="checkbox"/> Administrative Staff <input type="checkbox"/> Other: _____	
TT005	Does NurseConnect occur in the same area?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	
TT006	What are the last 3 digits of your phone number?		
Please state if the following statements are true or false:		True	False
TT101	Expectant mothers can only register to MomConnect at ANC facilities.		
TT102	In order to register to MomConnect, you only need the mother's name and phone number.		
TT103	Registration into MomConnect is mandatory for all pregnant mothers.		
TT104	MomConnect registrations are monitored by the National Department of Health.		
TT105	If a MomConnect registration is not successful at first attempt, then the mother can try to register again when she returns for her next ANC visit.		

TT106	I should document all relevant information on the new Patient Details form for every MomConnect registration.		
TT107	Only registered midwives can register pregnant woman to MomConnect.		
TT108	When the pregnant woman delivers the message automatically changes to include the baby.		
TT109	Pregnant woman can only be registered to MomConnect during the week days and during working hours.		
TT110	I can only use my own cellular phone to register mothers to MomConnect.		

Thank you for your participation!

## APPENDIX 5. Facility ANC Staff Survey



### Training Post-Test

No.	Question	Coding categories	Skip
Conduct the staff survey with the staff member who performed the registration after observation. It is important to conduct <u>at least two</u> observations, and two staff surveys for each facility visit.			
SECTION 1: FACILITY IDENTIFICATION			
S001	Facility Name:		
S002	Facility Number:		
S003	Type of Facility	Regional Hospital 1 Local Hospital 2 Clinic 3 Other, Specify: _____ 4	
S004	Managing Authority	Government/Public 1 NGO/Private not-for-profit 2 Private-for-profit 3 Mission/faith-based 4	
S005	Facility Location	Urban 1 Peri-urban 2 Rural 3	
S006	Date of Interview:		
S007	Interviewer Name:		
CONSENT			

No.	Question	Coding categories	Skip
<b>Conduct the staff survey with the staff member who performed the registration after observation. It is important to conduct <u>at least two</u> observations, and two staff surveys for each facility visit.</b>			
008	<p><b>Take Oral Consent: (if not already taken during observation)</b></p> <p>Good day! My name is _____. We are here on behalf of [IMPLEMENTING AGENCY] to provide support to facilities that are registering mothers to the National Department of Health's MomConnect program.</p> <p>I would like to ask you questions about your experiences with MomConnect. Information collected about this facility is intended to help us determine barriers that are preventing successful MomConnect registrations, and provide solutions as we are able. This information may also be used by the NDoH, organizations supporting MomConnect services, and researchers, for planning service improvement or for conducting further studies of MomConnect. Neither your name nor the names of any other health workers who participate in this short questionnaire will be included in the dataset or in any report; however, there is a small chance that any of these respondents may be identified later. Still, we are asking for your help to in order to collect this information.</p> <p>You may refuse to answer any question or choose to stop the interview at any time. However, we hope you will answer the questions, which can benefit you, your facility and pregnant mothers, should this information be used to improve MomConnect services for both healthcare workers and mothers.</p> <p>If there are questions for which someone else is the most appropriate person to provide the information, we would appreciate if you introduce us to that person to help us collect that information.</p> <p>At this point, do you have any questions? Do I have your agreement to begin the questionnaire?</p> <p>___ YES, consent is given—Proceed to S101</p> <p>___ NO, consent is not given—<b><u>stop survey</u></b></p>		

SECTION 2: STAFF SURVEY			
No.	Question	Coding categories	Skip
S101	How would you describe your current job role at this facility?	Facility Manager 1 Medical Doctor 2 Antenatal Care Nurse 3 Administration 4 Community Health Worker 5 Data Collector 6 Volunteer 7 Other, Specify: _____ 8	
S102	How long have you worked in this position at this facility?	Less than one year 1 1-3 years 2 4-5 years 3 More than 5 years 4	

S103	Did you receive training for MomConnect prior to 2016?	<p>Yes 1</p> <p>No 2</p>	2 → skip to 104
S103a	When did you receive training for MomConnect in 2016?	<p>DATE: ____ / ____</p> <p>MM YY</p>	
S103b	<p>Can you recall any of the training materials that were used during the training that you received, in 2016?</p> <p><b>Select all that apply</b></p>	<p>Staff manual 1</p> <p>Cheat Sheet 2</p> <p>Flipbook 3</p> <p>Poster 4</p> <p>Video 5</p> <p>Training was only done on the actual phone 6</p>	
S103c	Did you discuss the different MomConnect registration options available during your last training in 2016?	<p>Yes 1</p> <p>No 2</p> <p>I don't know 3</p>	
S103d	Did you discuss the new "Patient Details" form during your last training in 2016?	<p>Yes 1</p> <p>No 2</p> <p>I don't know 3</p>	
S103e	Did you receive instructions on HOW to fill out the new "Patient Details" form during your last training in 2016?	<p>Yes 1</p> <p>No 2</p> <p>I don't know 3</p>	
S103f	Did you receive instructions on WHEN to fill out the new "Patient Details" form during your last training in 2016?	<p>Yes 1</p> <p>No 2</p> <p>I don't know 3</p>	
S103g	Did you discuss potential solutions to common registration issues during your last training in 2016?	<p>Yes 1</p> <p>No 2</p> <p>I don't know 3</p>	
S103h	Did you discuss MomConnect Focal Persons during your last training in 2016?	<p>Yes 1</p> <p>No 2</p> <p>I don't know 3</p>	



S104	Who is your provincial manager?		
S105	Who is your district MomConnect focal point-person?		
S106	Who is your sub-district MomConnect focal point-person?		
S107	Who is the facility MomConnect focal point-person?		
S108	In general, who at this facility registers mothers on MomConnect? <b>Select all that apply.</b>	<p>ANC nurses 1</p> <p>Medical doctors 2</p> <p>Community Health Workers 3</p> <p>Data Collectors 4</p> <p>Administrative staff 5</p> <p>Anyone who is available 6</p>	
S109	At this facility, what is the <i>main</i> method for MomConnect Registration?	<p>Individual registration 1</p> <p>Group registration 2</p> <p>Batched registration 3</p> <p>I don't know 4</p>	<p>1 → skip to 110</p> <p>4 → skip to 110</p>
S109a	If group or batched, what are the reasons for registering as a group? <b>Select all that apply</b>	<p>No computer/internet/service to complete registrations on site 1</p> <p>Frequent service disruptions at site 2</p> <p>It is more efficient to register as a group 3</p> <p>Other, Specify: _____ 4</p>	
S109b	If group or batched, how often do the group registrations occur?	<p>More than once a day 1</p> <p>Once a day 2</p> <p>2 to 3 times a week 3</p> <p>At least once a week 3</p> <p>Sporadically/When there is service 4</p>	
S110	At this facility, do staff register the mothers on MomConnect or do the staff facilitate the registration and the mothers register themselves?	<p>Staff perform registrations 1</p> <p>Staff facilitate registrations 2</p> <p>Both 3</p> <p>I don't know 4</p>	

S111	Approximately how much time does the registration process take?		Minutes _____					
S112	Based on your knowledge or experience, how reliable is the _____ cellular network service around this facility? (Ask for each cellular network)	Network	Very Relia ble	Some what Relia ble	Not Relia ble	No Cover age	I don't know	
		a. Cell-C	1	2	3	4	0	
		b. MTN	1	2	3	4	0	
		c. Telkom	1	2	3	4	0	
		d. Virgin	1	2	3	4	0	
		e. Vodacom	1	2	3	4	0	
		f. Other	1	2	3	4	0	
S113	What are the main problems are encountered during the registration process?  <b>Prioritize top 2-3 issues</b>		Network Issues 1  Time outs 2  Phones do not work 3  Do not have required information available 4  Illiterate 5  Moms cannot read in available languages 6  Take too much time 7  Mothers do not want to register 8  Forms are unclear 9  Other, Specify: _____ 10					
S114	When problems occur, do you take steps to try to solve the problem?	Yes 1  No 2  Sometimes 3					2 → skip to 115	
S114a	If yes or sometimes, describe the steps that you take to try to resolve the problems. (open-ended)							
S115	If you are not able to successfully register mothers to MomConnect, do you take any steps to ensure that she can eventually be registered at a later time?		Yes 1  No 2  Sometimes 3					2 → skip to 116

S115a	If yes or sometimes, describe the steps that you take to ensure successful MomConnect registrations (open-ended)		
S116	When a problem occurs, do you report it to an immediate supervisor?	Yes 1 No 2 Sometimes 3	
S117	When a problem occurs, do you report it to a MomConnect focal person?	Yes 1 No 2 Sometimes 3	
S118	How are MomConnect registrations reported, generally?	Paper report 1 Verbal report 2 Other 3 Don't report 4	
S119	Do you receive feedback from your supervisor about this facility's registration rates?	Yes, weekly 1 Yes, monthly 2 Sometimes 3 No 4	
S120	OPEN ENDED: What issues would you like covered in MomConnect training?		

Interview Complete. Thank the staff member for their participation!

## APPENDIX 6. Registration Observation



### Registration Observation

No.	Question	Coding categories	Skip
<p>Carefully observe a MomConnect registration at the facility- It can be an individual, group or batched registration. Answer all appropriate guided observation questions. An optional notes box has been provided at the end for additional notes including: facility staff instructions, questions from the mother(s), difficulties that are encountered, body language, staff confidence, fidelity to the registration process, etc.</p> <p>Conduct the staff survey with the staff member who performed the registration after observation. It is important to conduct <u>at least two</u> observations, and two staff surveys for each facility visit.</p>			
<b>SECTION 1: FACILITY IDENTIFICATION</b>			
R001	Facility Name:		
R002	Facility Number:		
R003	Type of Facility	Regional Hospital 1 Local Hospital 2 Clinic 3 Other, Specify: _____ 4	
R004	Managing Authority	Government/Public 1 NGO/Private not-for-profit 2 Private-for-profit 3 Mission/faith-based 4	
R005	Facility Location	Urban 1 Peri-urban 2 Rural 3	
R006	Date of Observation:		
R007	Observer Name:		
<b>CONSENT</b>			

No.	Question	Coding categories	Skip
R008	<p><b>Take Oral Consent from provider:</b></p> <p>Good day! My name is _____. We are here on behalf of [IMPLEMENTING AGENCY] to provide support to facilities that are registering mothers to the National Department of Health's MomConnect program.</p> <p>I would like to observe a registration. Information collected about this facility is intended to help us determine barriers that are preventing successful MomConnect registrations, and provide solutions as we are able. This information may also be used by the NDoH, organizations supporting MomConnect services, and researchers, for planning service improvement or for conducting further studies of MomConnect. Neither your name nor the names of any other health workers who participate in this short questionnaire will be included in the dataset or in any report; however, there is a small chance that any of these respondents may be identified later. Still, we are asking for your help to in order to collect this information.</p> <p>You may refuse to answer any question or choose to stop the observation or interview at any time. However, we hope you will answer the questions, which can benefit you, your facility and pregnant mothers, should this information be used to improve MomConnect services for both healthcare workers and mothers.</p> <p>If there are questions for which someone else is the most appropriate person to provide the information, we would appreciate if you introduce us to that person to help us collect that information.</p> <p>At this point, do you have any questions? Do I have your agreement to begin the observations/interviews?</p> <p>___ YES, consent is given—Proceed to Q101</p> <p>___ NO, consent is not given—<u>stop survey</u></p>		
R009	<p><b>Take Oral Consent from mother(s):</b></p> <p>Good day! My name is _____. We are here on behalf of [IMPLEMENTING AGENCY] to provide support to facilities that are registering mothers to the National Department of Health's MomConnect program.</p> <p>I'd like to observe part of your visit. Information collected about this visit is intended to help us improve services provided to mothers. We are asking for your help to in order to collect this information. Neither your name nor the names of any other health workers who participate in this short questionnaire will be included in the dataset or in any report; however, there is a small chance that any of these respondents may be identified later. Still, we are asking for your help to in order to collect this information.</p> <p>You may choose to stop the observation at any time.</p> <p>At this point, do you have any questions? Do I have your agreement to begin the observations/interviews?</p> <p>___ YES, consent is given—Proceed to R101</p> <p>___ NO, consent is not given—<u>stop survey</u></p>		
<b>SECTION 2: GUIDED OBSERVATION</b>			
No.	Question	Coding categories	Skip

No.	Question	Coding categories	Skip
R101	Who facilitated/performed the registration?	<p>ANC Nurse 1</p> <p>Medical Doctor 2</p> <p>Community Health Worker 3</p> <p>Volunteer Health Worker 4</p> <p>Administrative staff 5</p> <p>Other, Specify: _____ 6</p>	
R102	Was it an individual, group or batched registration?	<p>Individual 1</p> <p>Group 2</p> <p>Batched 3</p>	<p>1 → continue to SECTION 2.1</p> <p>2 or 3 → skip to SECTION 2.2</p>

SECTION 2.1: OBSERVATION OF INDIVIDUAL REGISTRATION			
R103	Was client asked if she knew about MomConnect?	<div>Yes 1</div> <div>No 2</div>	
R104	Was the MomConnect program explained to the client?	<div>Yes 1</div> <div>No 2</div>	2 → skip to 105
R104a	As far as you can tell, was the information provided accurate?	<div>Yes 1</div> <div>No 2</div>	1 → skip to 105
R104b	List the information that was not accurate.	<div>1 _____</div> <div>2 _____</div> <div>3 _____</div>	
R105	Was client asked if she had already subscribed to MomConnect?	<div>Yes 1</div> <div>No 2</div>	
R106	Was client asked if she would like to be registered to MomConnect?	<div>Yes 1</div> <div>No 2</div>	
R107	Did client opt out of registering to MomConnect?	<div>Yes 1</div> <div>No 2</div>	1 → END
R108	Was client successfully registered to MomConnect during the session?	<div>Yes 1</div> <div>No 2</div>	1 → skip to 109
R108a	Why was the client not able to register to MomConnect?  <b>Select all that apply.</b>	<div>Network Issues 1</div> <div>Time out 2</div> <div>Phones did not work 3</div> <div>Did not have required information available 4</div> <div>Illiterate 5</div> <div>Could not read in available languages 6</div> <div>Took too much time 7</div> <div>Client did not want to register 8</div> <div>Instructions were unclear 9</div> <div>Other, Specify: _____ 10</div>	
R109	Did the staff provide the correct USSD registration number?	<div>Yes 1</div> <div>No 2</div>	

R110	Did the staff provide the correct facility code?	Yes 1 No 2	
R111	Did the client receive a message confirming the successful registration to MomConnect?	Yes 1 No 2 Unknown 3	
R112	Was the new "Patient Details" form filled out?	Yes 1 No 2	
R113	List any additional challenges you observed during the registration	1 _____ 2 _____ 3 _____	



R114	<p>ADDITIONAL NOTES: (Notes can include facility staff instructions, questions from the mother(s), difficulties that are encountered, body language, staff confidence, fidelity to the registration process, etc.)</p>
------	--

Observation complete. Thank the staff member and mother for their participation!

SECTION 2.2: OBSERVATION OF GROUP AND BATCHED REGISTRATION			
R203	How many mothers were in the group?	Number _____	
R204	Were the women present during the time of registration?	Yes 1 No 2	2 → skip to 211
R205	Were clients asked if they knew about MomConnect?	Yes 1 No 2	2 → skip to 206
R205a	How many knew about MomConnect?	Number _____	
R206	Was the MomConnect program explained to the clients?	Yes 1 No 2	2 → skip to 207
R206a	As far as you can tell, was the information provided accurate?	Yes 1 No 2	1 → skip to 207
R206b	List the information that was not accurate.	1 _____ 2 _____ 3 _____	
R207	Were clients asked if they had already subscribed to MomConnect?	Yes 1 No 2	2 → skip to 208
R207a	How many were already subscribed to MomConnect?	Number _____	
R208	Were clients asked if they would like to be registered to MomConnect?	Yes 1 No 2	
R209	Did any clients opt out of registering to MomConnect?	Yes 1 No 2	2 → skip to 210
R209a	How many clients opted out of registering to MomConnect?	Number _____	
R210	Were all clients successfully registered to MomConnect during the session?	Yes 1 No 2	1 → skip to 211
R210a	How many were <b>NOT</b> able to successfully register?	Number _____	

R210b	<p>Why were the clients not able to register to MomConnect?</p> <p>Select all that apply.</p>	<p>Network Issues 1</p> <p>Time out 2</p> <p>Phones did not work 3</p> <p>Did not have required information available 4</p> <p>Illiterate 5</p> <p>Could not read in available languages 6</p> <p>Took too much time 7</p> <p>Client did not want to register 8</p> <p>Instructions were unclear 9</p> <p>Other, Specify: _____ 10</p>	
R211	Did the staff provide the correct USSD registration number?	<p>Yes 1</p> <p>No 2</p>	
R212	Did the staff provide the correct facility code?	<p>Yes 1</p> <p>No 2</p>	
R213	Did all the clients receive a message confirming the successful registration to MomConnect?	<p>Yes 1</p> <p>No 2</p> <p>Unknown 3</p>	1 → skip to 214
R213a	How many did <b>NOT</b> receive a message confirming the successful registration to MomConnect?	Number _____	
R214	Was the new "Patient Details" form filled out?	<p>Yes 1</p> <p>No 2</p>	
R215	List any additional challenges you observed during the registration	<p>1 _____</p> <p>2 _____</p> <p>3 _____</p>	

216	<p>ADDITIONAL NOTES: (Notes can include facility staff instructions, questions from the mother(s), difficulties that are encountered, body language, staff confidence, fidelity to the registration process, etc.)</p>
-----	--

Observation complete. Thank the staff member and mothers for their participation!

## APPENDIX 7. Facility Audit



### MomConnect Facility Audit

No.	Question	Coding categories	Skip												
<b>SECTION 1: FACILITY IDENTIFICATION</b>															
A001	Facility Name:														
A002	Facility Number:														
A003	Type of Facility	Regional Hospital 1 Local Hospital 2 Clinic 3 Other, Specify: _____ 4													
A004	Managing Authority	Government/Public 1 NGO/Private not-for-profit 2 Private-for-profit 3 Mission/faith-based 4													
A005	Facility Location	Urban 1 Peri-urban 2 Rural 3													
A006	Date of Observation:														
A007	Observer Name:														
<b>SECTION 2: FACILITY AUDIT</b>															
A101	Did you obtain network coverage maps for this site visit?	Yes 1 No 2	2 → skip to 102												
A101a	Does the network coverage map(s) indicate coverage in this area?	<table border="1"> <thead> <tr> <th>Network</th><th>Yes</th><th>No</th><th>NA</th></tr> </thead> <tbody> <tr> <td>a. Cell-C</td><td></td><td></td><td></td></tr> <tr> <td>b. MTN</td><td></td><td></td><td></td></tr> </tbody> </table>	Network	Yes	No	NA	a. Cell-C				b. MTN				
Network	Yes	No	NA												
a. Cell-C															
b. MTN															

No.	Question	Coding categories				Skip
		c. Telkom				
		d. Virgin				
		e. Vodacom				
		f. Other				
A102	Is there a <b>Cell-C</b> network SIM card available to you at this site?	Yes 1 No 2				2 → skip to 103
A102a	For the <b>Cell-C</b> network, test cellular network availability at this site – Does the phone indicate that there is network availability for this provider?	Yes 1 No 2				2 → skip to 103
A102b	For the <b>Cell-C</b> network, test connectivity to MomConnect server from cellular network, can you verify that MomConnect successfully responded to a MomConnect subscription?	Yes 1 No 2				
A103	Is there a <b>MTN</b> network SIM card available to you at this site?	Yes 1 No 2				2 → skip to 104
A103a	For the <b>MTN</b> network, test cellular network availability at this site – Does the phone indicate that there is network availability for this provider?	Yes 1 No 2				2 → skip to 104
A103b	For the <b>MTN</b> network, test connectivity to MomConnect server from cellular network, can you verify that MomConnect successfully responded to a MomConnect subscription?	Yes 1 No 2				
A104	Is there a <b>Telkom</b> network SIM card available to you at this site?	Yes 1 No 2				2 → skip to 105
A104a	For the <b>Telkom</b> network, test cellular network availability at this site – Does the phone indicate that there is network availability for this provider?	Yes 1 No 2				2 → skip to 105
A104b	For the <b>Telkom</b> network, test connectivity to MomConnect server from cellular network, can you verify that MomConnect successfully responded to a MomConnect subscription?	Yes 1 No 2				
A105	Is there a <b>Virgin</b> network SIM card available to you at this site?	Yes 1 No 2				2 → skip to 106
A105a	For the <b>Virgin</b> network, test cellular network availability at this site – Does the phone indicate that there is network availability for this provider?	Yes 1 No 2				2 → skip to 106

No.	Question	Coding categories	Skip
A105b	For the <u>Virgin</u> network, test connectivity to MomConnect server from cellular network, can you verify that MomConnect successfully responded to a MomConnect subscription?	Yes 1 No 2	
A106	Is there a <u>Vodacom</u> network SIM card available to you at this site?	Yes 1 No 2	2 → skip to 107
A106a	For the <u>Vodacom</u> network, test cellular network availability at this site – Does the phone indicate that there is network availability for this provider?	Yes 1 No 2	2 → skip to 107
A106b	For the <u>Vodacom</u> network, test connectivity to MomConnect server from cellular network, can you verify that MomConnect successfully responded to a MomConnect subscription?	Yes 1 No 2	
A107	Which MomConnect materials are available at this facility?  <b>Select all that apply</b>	Poster 1 Flipbook 2 Brochure/Pamphlet 3 Staff manual 4 Cheat Sheet 5 Other, Specify: _____ 6	
A108	Is MomConnect advertised on the exterior of the building (signs, etc)?	Yes 1 No 2	
A109	Is MomConnect advertised on the interior of the building (posters, etc)?	Yes 1 No 2	

No.	Question	Coding categories	Skip
A110	<b>Additional Notes:</b> Notes can include facility staff instructions, questions from the mother(s), difficulties that are encountered, body language, staff confidence, fidelity to the registration process, etc. Anything you think is important.		

Audit complete. Thank the staff and management for their participation!



## APPENDIX 8. PRIORITY ANC FACILITIES

The following 121 facilities were persistently categorized as “priority facilities”—those with high ANC volume and low registration rates. The lower-case letters before each facility name indicate the province where the facility is located. The key below the table explains these abbreviations.

- ec Lusikisiki Village Clinic (Qaukeni)
- ec Mqanduli CHC
- ec Ngangelizwe CHC
- ec Ngcwanguba CHC
- ec St Elizabeth's Gateway Clinic
- ec St Patrick's Gateway Clinic
- ec Stanford Terrace Clinic
- ec Taylor Bequest Gateway Clinic (Elundini)
- fs Sasolburg Mobile 4
- gp 80 Albert Street Clinic
- gp Atteridgeville Clinic
- gp Barney Molokoane Clinic
- gp Bekkersdal West CHC
- gp Boekenhout Clinic
- gp Bophelong (Region B) CDC
- gp Bophelong (Region C) Clinic
- gp Bristlecone Clinic
- gp Carletonville Central Clinic
- gp Charlotte Maxeke Hospital
- gp Chiawelo CHC
- gp Chris Hani Baragwanath Hospital
- gp Diepsloot South Clinic
- gp Dr Ramirez Martinez Clinic
- gp Dukathole Clinic
- gp East Lynne Clinic
- gp Edenvale Hospital
- gp Eikenhof Prov Clinic
- gp Eric Ndeleni Clinic
- gp Eyethu Yarona Clinic
- gp Folang Clinic\*
- gp Halfway House Clinic
- gp Hercules Clinic
- gp Itsoseng Non-medical Site
- gp Karenpark Clinic
- gp Lenasia Clinic
- gp Lenasia South CHC
- gp Lyttelton Clinic
- gp Maki Legwetwe Clinic
- gp Mamelodi Hospital
- gp Mamelodi West Clinic
- gp Maria Rantho Clinic
- gp Market Avenue Clinic
- gp Meadowlands Zone 2 Prov Clinic
- gp Odirileng Maponya Clinic
- gp Olifantsfontein Clinic
- gp Payneville Clinic
- gp Phahameng Clinic
- gp Pholosong Hospital
- gp Phomolong Clinic
- gp Phuthanang Clinic
- gp Pretoria West Hospital
- gp Rosettenville Clinic
- gp Silverton Clinic
- gp Soshanguve 2 Clinic
- gp Stanza Bopape II Clinic
- gp Steve Biko Academic Hospital
- gp Stretford CHC
- gp Thembelihle Clinic
- gp Thoko Mngoma Clinic
- gp Tladi Prov Clinic
- gp Vlaktefontein Clinic
- gp Vosloorus Ext 28 Clinic
- gp Witkoppen Clinic
- gp Zola Gateway Clinic
- gp Zola Jabulani Hospital
- kz AE Haviland Memorial Clinic
- kz Amaoti Clinic
- kz Bergville Mobile 2
- kz Ekuphileni (Umlazi L) Clinic
- kz Inkosi Albert Luthuli Central Hospital
- kz Jozini Clinic
- kz King Dinizulu Clinic
- kz King Dinuzulu Hospital
- kz KwaMagwaza Gateway Clinic
- kz Mabheleni Clinic
- kz Mpumuza Clinic
- kz Murchison Gateway Clinic
- kz Nkundusi Clinic
- kz Nsimbini Clinic
- kz Ntabeni Clinic
- kz Qadi Clinic
- kz Redhill Clinic
- kz Scottsville Clinic
- kz Ulundi A Clinic
- kz Umlazi V Clinic
- kz Umzomuhle (Umlazi H) Clinic
- kz Wentworth Gateway Clinic
- lp Burgersfort Clinic
- lp Mavambe Clinic
- lp Mphambo CHC
- lp Sibasa Clinic
- mp Amersfoort Clinic
- mp Klarinet Clinic
- nc Jerry Botha Clinic
- nc Kagiso CHC
- nc Seoding Clinic
- nw Boitekong Clinic
- nw Brits Hospital
- nw Hebron Clinic
- nw Ikhuseng (Klipgat) Clinic
- nw Oukasie Clinic
- nw Setlagole Clinic
- nw Wonderkop Clinic
- wc Albow Gardens Clinic
- wc Delft CHC
- wc Fagan Street Clinic
- wc False Bay Hospital
- wc Kensington CDC
- wc Khayelitsha (Site B) CHC
- wc Kraaifontein CHC
- wc Kuyasa CDC
- wc Macassar CDC
- wc Mowbray Maternity Hospital
- wc Phumlani Clinic
- wc Retreat CHC
- wc Sarepta Clinic
- wc St Vincent Clinic
- wc Tafelsig CDC
- wc Vanguard CHC
- wc Weltevreden Valley Clinic
- wc Woodstock CDC

Key:

Gp = Gauteng Province; Ec = Eastern Cape Province; Kz = KwaZulu-Natal Province; Lp = Limpopo Province; Nw = North Western Province; Nc = Northern Cape Province; Wc = Western Cape Province; Mp = Mpumalanga Province; Fs = Free State Province



**MEASURE** Evaluation–Strategic Information for South Africa (MEval-SIFSA) Project

138 Muckleneuk Street

Nieuw Muckleneuk, Pretoria

South Africa

Tel: + 27 12 346 7490

<http://www.measureevaluation.org/sifsa>

This research has been supported by the President's Emergency Plan for AIDS Relief (PEPFAR) through the United States Agency for International Development (USAID) under the terms of MEASURE Evaluation–Strategic Information for South Africa associate award AID-674-LA-13-00005. MEASURE Evaluation–SIFSA is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with ICF International; John Snow, Inc.; Management Sciences for Health; Palladium; and Tulane University. Views expressed are not necessarily those of PEPFAR, USAID, or the United States government.  
TR-17-207

